Listing of the claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.   A temperature monitoring circuit comprising:

at least one temperature sensor for sensing a temperature at a measuring point;

a first temperature measurement circuit coupled to the at least one temperature sensor for generating a first temperature value;

a second temperature measurement circuit coupled to the at least one temperature sensor for generating a second temperature value; and

a control circuit for determining a difference between the first and second temperature values and for comparing the difference to a first predetermined threshold.

2.   The temperature monitoring circuit as in claim 1, wherein, if the difference is greater than the first predetermined threshold, the control circuit generates a warning signal.

3.   The temperature monitoring circuit as in ~~any preceding~~ claim 1, wherein the control circuit is adapted to compare the difference to a second predetermined threshold and, if the difference is greater than the second predetermined threshold, the control circuit generates an alarm signal.

4.   The temperature monitoring circuit as in ~~any preceding~~ claim 1, wherein the control circuit is adapted to compare the difference to a second predetermined threshold and, if

the difference is greater than the second predetermined threshold, the control circuit shuts down a power source.

5.   The temperature monitoring circuit as in ~~any preceding~~ claim 1, wherein the at least one temperature sensor is at least one of a thermocouple, thermistor, and resistance temperature detector.

6.   The temperature monitoring circuit as in ~~any preceding~~ claim 1, wherein the control circuit is at least one of a microprocessor, field-programmable gate array and programmable logic device.

7.   The temperature monitoring circuit as in ~~any preceding~~ claim 1, further comprising a second temperature sensor coupled to the second temperature measurement circuit.

8.   An electrosurgical generator comprising:

a radio frequency (RF) output circuit for outputting RF energy;

a control circuit for controlling the output of the RF output circuit; and

a temperature monitoring circuit comprising:

at least one temperature sensor for sensing a temperature at a measuring point;

a first temperature measurement circuit coupled to the at least one temperature sensor for generating a first temperature value;

a second temperature measurement circuit coupled to the at least one temperature sensor for generating a second temperature value; and

a control circuit for determining a difference between the first and second temperature values and for comparing the difference to a first predetermined threshold.

9.   The electrosurgical generator as in claim 8, wherein, if the difference is greater than the first predetermined threshold, the control circuit generates a warning signal.

10.   The electrosurgical generator as in claim 8 ~~or 9~~, further comprising a display for displaying the warning signal.

11.   The electrosurgical generator as in claim 8, ~~9 or 10,~~ further comprising an audio output for audibly producing the warning signal.

12.   The electrosurgical generator as in claim 8, ~~9, 10, or 11,~~ wherein the control circuit is adapted to compare the difference to a second predetermined threshold and, if the difference is greater than the second predetermined threshold, the control circuit generates an alarm signal.

13.   The electrosurgical generator as in claim 8, ~~9, 10, 11 or 12,~~ further comprising a display for displaying the alarm signal.

14.   The electrosurgical generator as in claim 8, ~~9, 10, 11, 12 or 13,~~ further comprising an audio output for audibly producing the alarm signal.

15.   The electrosurgical generator as in claim 8, 9, 10, 11, 12, 13 or 14, wherein the control circuit is adapted to compare the difference to a second predetermined threshold and, if the difference is greater than the second predetermined threshold, the control circuit shuts down the RF output circuit.

16.   The electrosurgical generator as in claim 8, 9, 10, 11, 12, 13, 14 or 15, wherein the at least one temperature sensor is at least one of a thermocouple, thermistor, and resistance temperature detector.

17.   The electrosurgical generator as in claim 8, 9, 10, 11, 12, 13, 14, 15 or 16, wherein the control circuit is at least one of a microprocessor, field-programmable gate array and programmable logic device.

18.   The electrosurgical generator as in claim 8, 9, 10, 11, 12, 13, 14, 15, 16 or 17, further comprising a second temperature sensor coupled to the second temperature measurement circuit.

19.   An electrosurgical system comprising:

an electrosurgical generator for outputting radio frequency (RF) energy;

an electrosurgical instrument coupled to the electrosurgical generator for applying the RF energy to an operative site; and

a temperature monitoring circuit comprising:

at least one temperature sensor for sensing a temperature at a measuring point;

a first temperature measurement circuit coupled to the at least one temperature sensor for generating a first temperature value;

a second temperature measurement circuit coupled to the at least one temperature sensor for generating a second temperature value; and

a control circuit for determining a difference between the first and second temperature values and for comparing the difference to a first predetermined threshold.

20.   The electrosurgical system as in claim 19, wherein the electrosurgical instrument comprises as least one end effector member and the at least one temperature sensor is located in the at least one end effector member.

21.   The electrosurgical system as in claim 19 or 20, wherein, if the difference is greater than the first predetermined threshold, the control circuit generates a warning signal.

22.   The electrosurgical system as in claim 19, 20 or 21, wherein the electrosurgical generator further comprises a display for displaying the warning signal.

23.   The electrosurgical system as in claim 19, 20, 21 or 22, wherein the electrosurgical generator further comprises an audio output for audibly producing the warning signal.

24.   The electrosurgical system as in claim 19, 20, 21, 22 or 23, wherein the control circuit is adapted to compare the difference to a second predetermined threshold and, if

the difference is greater than the second predetermined threshold, the control circuit generates an alarm signal.

25.   The electrosurgical system as in claim 19, ~~20, 21, 22, 23 or 24,~~ wherein the electrosurgical generator further comprises a display for displaying the alarm signal.

26.   The electrosurgical system as in claim 19, ~~20, 21, 22, 23, 24 or 25,~~ wherein the electrosurgical generator further comprises an audio output for audibly producing the alarm signal.

27.   The electrosurgical system as in claim 19, ~~20, 21, 22, 23, 24, 25 or 26,~~ wherein the control circuit is adapted to compare the difference to a second predetermined threshold and, if the difference is greater than the second predetermined threshold, the control circuit shuts down a RF output circuit of the electrosurgical generator.

28.   A method for controlling an electrosurgical system, the method comprising the steps of:

reading a first temperature value at an operative site;

reading a second temperature value at the operative site;

determining a difference of the first and second temperature values;

determining if the difference is greater than a first predetermined threshold,

wherein when the difference is greater than the first predetermined threshold,

generating a warning signal.

29.   The method as in claim 28, further comprising the step of, wherein when the difference is greater than a second predetermined threshold, generating an alarm signal.

30.   The method as in claim 28 ~~or 29~~, further comprising the step of shutting down the electrosurgical system when the difference is greater than a second predetermined threshold.